BRITISH ANZANI 342 cc. COMPETITION UNITWIN.

OPERATING INSTRUCTIONS.

The competition 'UNITWIN' provides a remarkably good basic performance and should be used with a matched hull, i.e. a hull of the type, size and weight, not only to match the motor, but to be in keeping with the conditions under which the outfit is likely to operate. We are always pleased to offer advice in this connection. It should be appreciated that all motors of a given type develop substantially the same power when leaving the factory, and winning races depends on the pilot's skill in handling his craft, tuning his motor to develop maximum power and finding the best propeller to suit the combination of tuned engine and hull. Racing motors should be carefully run in for a few hours at half throttle, with an occasional burst of full throttle. For racing in Great Britain the exhaust system must not be modified in any way. Also a dead man throttle is compulsory.

These operating instructions are brief as it is assumed that racing pilots are familiar with the construction and maintenance of racing motors. Furthermore, owner tuning may necessitate some departure from these instructions.

A fuel tank is not included with the motor and the owner must fit his own tank either under foredeck or against transom according to preference. A capacity of one or two gallons is suggested. A fuel line with shut off tap must be taken from bottom of tank to float chamber of carburettor. The fuel in tank must be pressurized to a maximum of 2 lbs. per sq. in. either by means of a car inner tube stowed under foredeck or from the pressure feed tube fitted to crankcase near magneto base. If using the latter two points must be noted:

(1) A reducing valve must be fitted in pressure line from the crankcase feed to top of fuel tank, as it will be appreciated that crankcase pressure is approximately 7 lbs. per sq. in.

(2) Initial pressure to fill carburettor must be provided by fitting a rubber tube with shut off tap to top of tank. Pressure by mouth will suffice.

TO START MOTOR

1. Mix oil and petrol thoroughly in a separate can, in the proportion of one in ten or three quarters pint of Wakefield Grade 'XL' or other first class equivalent, to each gallon of petrol. Always filter mixture when filling tank. Although the compression ratio of this motor is 12 to 1 a fuel of 80 octane rating or standard premium grade is satisfactory. Use one pint of oil to each gallon of petrol or one in eight proportion for first six hours.

2. Ascertain that float chamber is full of fuel.

3. Close carburettor air choke by means of control lever.

4. Open throttle about one quarter.

5. Insert knot of starting cord in right notch of starter disc; coil in clockwise direction and pull forcibly.

6. When motor starts, which should be after two or three pulls, open air lever gradually. The speed of motor is then controlled by throttle lever. Best performance may be obtained with air lever partly closed.

7. To start warm motor, it is only necessary to set throttle; choke should not be required.

GENERAL.

Water circulation on this motor is accomplished by forward motion of craft and the motor must not be operated at low speed, as overheating will result. After starting, get the boat on plane as soon as possible and check that water is emerging from outlet pipe fitted to cylinder head.

Propeller gears are protected by an easily replaceable brass shear pin fitted to the propeller boss. The underwater gear housing should be lubricated with engine oil, castor oil or a light high pressure gear oil. See special instructions for the Silver Arrow underwater unit.

To prevent motor slipping sideways, we recommend the fitting of a lag screw in transom to suit the slot provided in stern bracket of motor. The best transom height and motor angle for any particular condition can only be found by experiment, but a 14" transom should put the cavitation plate about one eighth of an inch above bottom of hull, which is a good starting point for short circuit racing. The thrust block should be adjusted so that motor is vertical when boat is planing.

The best jet size and needle setting for carburettor can only be ascertained by experiment and will vary according to the degree of tuning, type of fuel, atmospheric conditions, etc. A number 110 needle jet is fitted and the throttle slide taper needle is adjustable. Three main jets, numbers 320, 330 and 340 are supplied. The carburettor is an 'Amal' Monobloc type 389 with 1.3/16" dia. choke.

The magneto contact breaker points should be maintained at .012" gap and the spark plug gaps at .022". Only plugs of 14mm. thread and half an inch reach should be used. Champion L.A.11 have proved very successful. If necessary a shield should be fitted to protect spark plugs from water spray. Experiment will indicate the best ignition timing. The Lucas magneto is not variable and a good initial setting for motors as shipped from the factory is 32 degrees advance or 7/32" before T.D.C. Excessive ignition advance could cause undue strain and failure of engine components. The magneto gear is not keyed to its shaft and thus allows "part tooth" variation. Should the magneto suffer immersion it should be washed out with methylated spirit and dried for about two hours in a low oven.

The crankshaft is a built up assembly allowing renewal of crankpins etc. We do not recommend owners to undertake this work, and the assembly should be returned to our Works when attention is necessary.

When ordering spares, always state serial number of motor.

As racing may impose such unusual and unforeseen stresses, by accident or otherwise, no guarantee applies to motors used for this purpose. More than usual care is, however, taken at all stages of production. We reserve the right to alter specification or price without notice.

BRITISH ANZANI ENGINEERING CO. LTD.,

HAMPTON HILL, MIDDLESEX.

'PHONE: MOLESEY 2690

February 1959

Special Underwater Gear Oil 12/6d. per quart.

BRITISH ANZANI COMPETITION UNITWIN

MAINTAINANCE INSTRUCTIONS FOR MARK 2 SILVER ARROW GEAR HOUSING

This special underwater unit is suitable only for racing service. It must be treated with great care, regularly lubricated and kept scrupulously clean externally. Always remove propeller when motor not in use and never allow the weight of motor to rest on skeg fin.

LUBRICATION. A hexagonal headed filler plug is located at the rear of drive shaft XXXing flange. Lubricant is contained in a cored passage the entire depth of gear housing in addition to the torpedo suction. A drain plug fill be found near skeg fin. It is essential that lubricant be changed after every meeting. This is a very simple operation, it being only necessary to remove both filler and drain plugs so as to allow all the old oil to drain out. Replace drain plug and fill with fresh oil to within half an inch of filler plug level. Any preferred gear oil may be used, but it must be thin in view of the high speed at which these gears operate. We recommend a very light high pressure gear oil, castor oil or Duckhams KO.10.

CONSTRUCTION. The design of this unit is in advance of anything previously attempted, and represents probably the minimum frontal area combined with extreme simplicity. Adjustment is provided for both drive shaft and propeller shaft gears. Full view of gear mesh is provided by removing the skeg plate which is retained by a single Allen screw. Great care must be taken when replacing this plate to see that the joint is sound to prevent ingress of water. Use jointing compound on the gasket if necessary.

The propeller shaft is integral with its gear and is built into a sub-assembly together with its associated roller thrust and roller journal bearings within a screwed steel sleeve. This assembly can be unscrewed from housing after removal of alloy locking cap (right hand thread) and locating grub screw. To remove vertical gear shaft, proceed as follows. First withdraw propeller shaft assembly as described above, then remove the six cheese head screws which attach the top bearing to upper face of bearing. The ball bearing which is a combined thrust and journal type should come away with the cap and expose the thrust collar which retains the split cotter in its shaft groove. This cotter should be lifted off. The two halves of split cotter removed from their groove and the gear shaft withdrawn downwards.

These gear housings are carefully assembled at our Works and the gears correctly adjusted. These adjustments should not be interfered with unless absolutely necessary. Adjustments of the propeller shaft gear are obtained by movement of the screwed sleeve. It will probably be necessary to re-drill for the locating grub screw. Adjustment of the drive shaft gear is obtained by shims between the top bearing and cap and the upper face of housing.

COOLING WATER. No water pump is incorporated as it is assumed that racing motors will not be operated at less than fifteen miles per hour. Water under pressure of boat speed enters the drilled hole at forward end of torpedo and fills the passage leading to elbow at top flange.

DRIVING DEPTH. It is impossible to give definite advice for propeller depth or angle of motor as this is a matter for experiment to suit any particular hull, water condition, weight of pilot and driving style. A safe initial setting is with cavitation plate ¾” above bottom of hull and motor vertical when hull is planing. The standard B.U. propeller has been found best for general use with clean “B” motor.

FEBRUARY 1959

BRITISH ANZANI ENGINEERING CO. LTD.,
HAMPTON HILL, MIDDLESEX.
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February 1959

COMPETITION UNITWIN

MARK TWO SILVER ARROW UNDERWATER UNIT.

SPARE PARTS LIST.

Part No.	Description	No.Off	Price Each £. s. d.
SCH.2615	Gear Housing	1	8. 10. 0.
SCH.2616	Gear Housing Skeg Cover	1	1. 15. 0.
SCH.2676	Skeg Cover Gasket	1	1. 0.
SCH.2617	Skeg Cover Fixing Screw	1	2. 3.
SCH.1729	Skeg Cover Dowel Pin	1	6.
SCH.1724	Gear Housing Core Plug	1	6.
SCH.2618	Drive Shaft and Pinion	1	3. 10. 0.
SCH.2620/1	Drive Shaft Roller Bearing	1	16. 6.
SCH.2621	Drive Shaft Top Bearing	1	15. 0.
SCH.2622	Drive Shaft Split Cotter	Pair	4. 6.
SCH.2624	Split Cotter Retainer	1	5. 0.
SCH.2623	Top Bearing Cap	1	1. 1. 6.
SCH.2671	Top Bearing Cap Screws	6	6.
SCH.2114	Cap Screw Spring Washer	6	6.
SCH.2685	Top Bearing Oil Seal	1	5. 6.
SCH.2677	Top Bearing Adj. Shim	As req.	6.
SCH.1837	Oil Drain Plug	1	1. 0.
SCH.2619	Propeller Shaft and Pinion	1	3. 15. 0.
SCH.2626/1	Propeller Shaft Bearing Sleeves	1	1. 15. 0.
SCH.2629	Thrust Bearing Track Washer	1	3. 0.
SCH.2630	Thrust Bearing Adj.Nut	1	6. 6.
SCH.1829	Thrust Bearing Locknut	1	2. 0.
SCH.2625	Propeller Shaft Oil Seal	2	5. 6.
SCH.2632	Gear Housing End Cap	1	16. 6.
SCH.1839	Propeller Shear Pin	1	2.
SCH. 483	Propeller Nut	1	3. 0.
SCH. 573	Propeller Nut Split Pin	1	2.
SCH.1222	Drive Casing Stud	3	1. 8.
SCH. 221	Drive Casing Stud Nut	3	4.
SCH. 476	Drive Casing Stud Washer	3	3.
SCH.1290	Drive Casing Gasket	1	1. 1.
SCH.1840	Water Inlet Elbow	1	2. 9.
SCH.1872	Water Inlet Hose	1	3. 4.
SCH.2633	Exhaust Pipe Lower	1	15. 0.
SCH.2635	Exhaust Pipe Flange Gasket	1	9.
SCH.1989	Exhaust Pipe Flange Screws	1	8.
SCH.1286	Oil Filler Plug	1	2. 2.
SCH.1288	Oil Filler Plug Washer	1	2.
SCH.1877	Propeller Class “B”	1	3. 17. 0.
SCH.1890	Propeller Class “A”	1	3. 17. 0.
SCH.1738	Upper Drive Shaft	1	3. 0. 0.
SCH.1776	Drive Shaft Coupling Top	1	11. 0.
SCH.1226	Drive Shaft Coupling Bottom	1	13. 0.
SCH.1997	“C” Spanner for End Cap	1	3. 4.

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